Set Z Clipping

Introduction

As you apply zoom transformations in EnSight, you may have noticed that the model begins to progressively disappear as you move close to the model. This happens when the visible model parts intersect the front *Z clipping planes*. The Z-clip planes (which are always perpendicular to your line of sight) are specified as distances from the look-from point (the camera position). The Z clipping plane positions can be set by the user and can be used to remove unneeded geometry from the display. Each viewport has it's own set of Z clipping planes. By default, the Z-clip planes adjust (float) with the model - thus stay out of the way if possible.

Basic Operation

The initial position of the Z clipping planes is set based on the Z (depth) extent of the visible geometry – plus quite a bit extra to leave room for transformations. The plane positions can only be set via the Transformation Editor dialog.

1. **In the Transformation Control area, Click Transf. Edit... -> Editor Function -> Z_clip to open the Transformation Editor.**

The graphics display shows the relative positions of the front and back clipping planes (left and right vertical red lines) to the Z extent of all currently visible objects (white box).

2. **Toggle the Float Z-Clip Planes option on to have the Z-clip planes automatically adjust.**

OR

Toggle the option off to manually adjust the Z-clip plane locations.

If the Float Z-Clip option is off, you can edit the plane positions either by dragging the red lines or by entering explicit values in the Front and Back text fields. Recall that the values represent the distance from the look-from point to the plane.

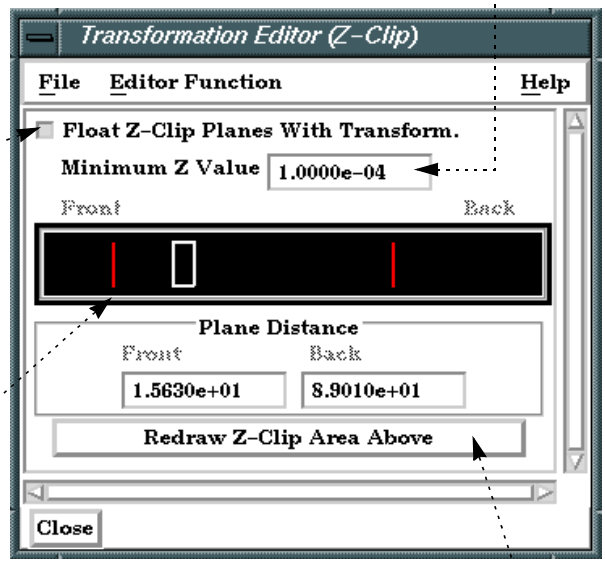
3. **Place the mouse pointer over the desired plane marker and click the left mouse button.**

4. **Drag the marker left or right to the desired location. The Graphics Window will update as the marker is moved.**

– OR –

3. **Enter explicit values in the Front and/or Back text fields and press return.**

If the Float Z-Clip Planes With Transform option is on, you can specify the minimum Z value that the Front clip plane can float to.



If the markers become difficult to manipulate due to changes, click the Redraw Z-Clip Area Above button to rescale the markers.

Each viewport maintains it's own independent Z clipping planes. The operation described above will change the planes for the current viewport (as set by clicking in the desired viewport in the Graphics Window).

Note that clicking Reinitialize, in the Reset Tools and Viewport(s) dialog found under the Reset... button of the Transformations area, will reset the Z clipping planes of the current viewport based on the Z extent of all objects currently visible in that viewport.

Other Notes

EnSight uses your workstation's graphics hardware to implement Z clipping. The same hardware is used for *Z-buffering* – determining which objects are visible based on Z (depth) values. The Z buffer typically provides 24 bits of resolution. EnSight attempts to make the best use of this limited resolution by setting the front and back clipping planes reasonably close together. If the planes are too far apart, relative Z resolution is reduced and the hardware

may not be able to accurately determine surface visibility. If you see artifacts like this, move the clipping planes closer together.

EnSight also provides an additional clipping plane: the auxiliary clipping plane. Unlike the Z clipping planes which are always perpendicular to your line of sight, the auxiliary clipping plane can be placed at any location in any orientation. The Plane Tool specifies the location of the auxiliary clipping plane. By default, all geometry on the negative Z side of the Plane Tool is removed. However, you can specify auxiliary clipping on a per part basis – some parts are clipped while others are not. See **How To Set Auxiliary Clipping** for more information.

See Also

How To Define and Change Viewports, **How To Set Auxiliary Clipping**

User Manual: **Z-Clip**